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PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of

Etsuko KADOWAKI, et al.

Docket No: Q73675

Appln. No.: 10/540,028

Group Art Unit: 1713

Confirmation No.: 8868

Examiner: Peter D. Mulcahy

Filed: June 22, 2005

For: CURABLE COMPOSITION, CURED PRODUCT THEREOF, MOLDED PRODUCT THEREOF AND USE AS FUEL CELL SEPARATOR

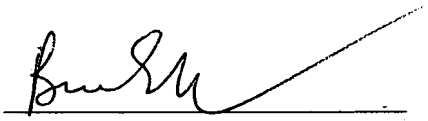
SUBMISSION OF EXECUTED DECLARATION UNDER 37 C.F.R. §1.132

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Submitted herewith is a copy of an executed Declaration Under 37 C.F.R. §1.132 signed by Tadashi IINO. An unexecuted version of this Declaration was filed with the Amendment filed on September 28, 2007. Consideration of the Declaration is respectfully requested.

Respectfully submitted,



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Date: October 30, 2007

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DECLARATION UNDER 37 C.F.R. § 1.132

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P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

I, Tadashi IINO of SHOWA DENKO K.K., 13-9, Shiba Daimon 1-chome, Minato-ku, Tokyo 105-8518 Japan, declare and state:

That I am a research chemist having been awarded a master's degree from the post-graduate course of the Faculty of Industrial Chemistry, the Department of Science and Engineering, Chuo University in March, 1993, and have engaged in research on the application of a conductive polymer for a functional electrode, and

That I have been employed since April, 1993 by SHOWA DENKO K.K., 13-9, Shiba Daimon 1-chome, Minato-ku, Tokyo 105-8518 Japan, and have been engaged in research mainly on:

development of chlorinated polyethylene-based dynamic cross-linking thermoplastic elastomers in the Kawasaki Plastic Laboratory of the same company from May, 1993 to March, 1996;

development of carbon/resin composition in the Kawasaki Plastic Laboratory of the same company from April, 1996 to May, 1999; and

development of separator for fuel cell in the Kawasaki Plastic Laboratory, Corporate R&D Center and Production Technology Center of the same company from June, 1999 up to now.

To demonstrate the unexpected superiority of the present invention, the following experimentation was conducted by me or under my direct supervision.

Initially, I note that what might be considered the closest specific embodiment disclosed in Saito involves the use of diallyl phthalate resin (see Example 11 in TABLE 2 of US 6,436,567 B1).

Since diallyl phthalate resin has an ester bond like vinyl ester resin has, it is considered that the hydrothermal (or hot water) resistance (antihydrolyzability) of the curable resin composition comprising diallyl phthalate resin is inferior to that of the curable resin composition comprising 1,2-polybutadiene as in the present invention from the following experimental data, which confirmed the surprising effects of the present invention in comparison with a composition in which vinyl ester resin is used.

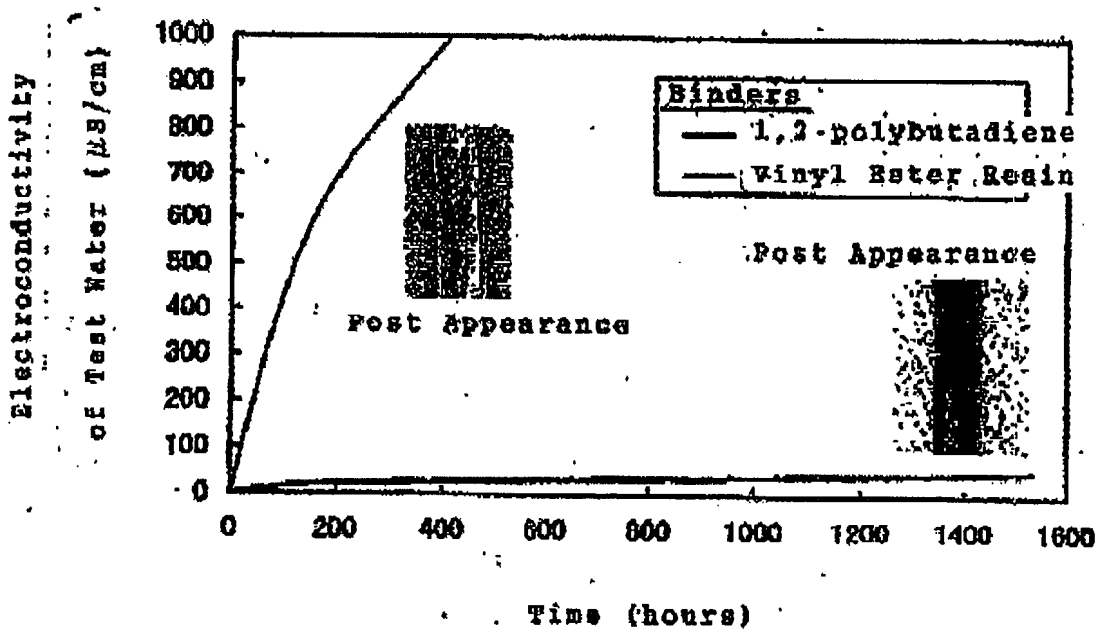
In particular, the figure below shows comparative data between 1,2-polybutadiene, which is a diene compound of the present invention, and vinyl ester resin, which has an ester bond like

DECLARATION UNDER 37 C.F.R. § 1.132
U.S. Application No.: 10/540,028

Attorney Docket No.: Q73675

diallyl phthalate resin has. From the test results, it is concluded that if 1,2-polybutadiene is used in a curable composition, the curable composition can exert excellent hydrothermal (or hot water) resistance in comparison with the composition in which vinyl ester resin is used.

Hydrothermal (or Hot Water) Resistance of Carbon Resin Molded Separators at 150°C (Assessment of Test Water Electroconductivity)



Samples: 4 pieces of 20x20x2mm

4 pieces of 50x10x2mm

Purified water: 60cc

Composition: Graphite/Binder=85.7/14.3wt%

Test Conditions: 60cc of purified water (<10μS/cm) was poured into a pressure-resistant closed container, and the samples (cured products) of the above composition were cut into 4

pieces and then placed into the container. The container was closed and placed in an oven at 150°C, and then the change of electroconductivity of the purified water was measured over time. The measurements of electroconductivity were conducted at room temperature (23°C).

CONCLUSION: Vinyl ester resin was hydrolyzed by hot water and the resultant decomposed ions increased electoconductivity of the water.

Thus, I conclude that the present invention provides unexpectedly superior results.

I declare further that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Date: October 2, 2007

By: Tadashi Iino
Tadashi IINO